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**A REDESCRIPTION OF CULEX (ACALLEOMYIA)  
OBSCURUS (LEICESTER)**  
(DIPTERA: CULICIDAE)

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**A REDESCRIPTION OF CULEX (ACALLEOMYIA)  
OBSCURUS (LEICESTER)**  
(DIPTERA: CULICIDAE)<sup>1</sup>

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*Culex (Acalleomyia) obscurus* (Leicester) has been poorly characterized since its original description. Although Leicester (1908) recognized the highly modified male terminalia as being one of the outstanding distinguishing features of this species, his description was rather vague and was not accompanied by an illustration. Edwards (1922) illustrated the male terminalia, but the specimen which he used was apparently mounted in a somewhat twisted position. As a result, the representation of most of the structures is either misleading, incomplete, or erroneous. No subsequent author has attempted to rectify these descriptions, nor have the immature stages been described.

The following redescription is based on the type series in the British Museum (Natural History); on specimens received from Dr. S. Ramalingam, University of Kuala Lumpur, accessioned to the U. S. National Museum; on material collected by Dr. D. H. Colless on loan from the British Museum; and on specimens from the Institute for Medical Research, Kuala Lumpur, deposited in the U. S. National

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Museum. Format and terminology conforms to that followed by Bram (1967).

**Culex (Acalleomyia) Obscurus** (Leicester), 1908

(Fig. 1)

*Acalleomyia obscurus* Leicester, 1908, Cul. Malaya: 194 (♂, ♀).

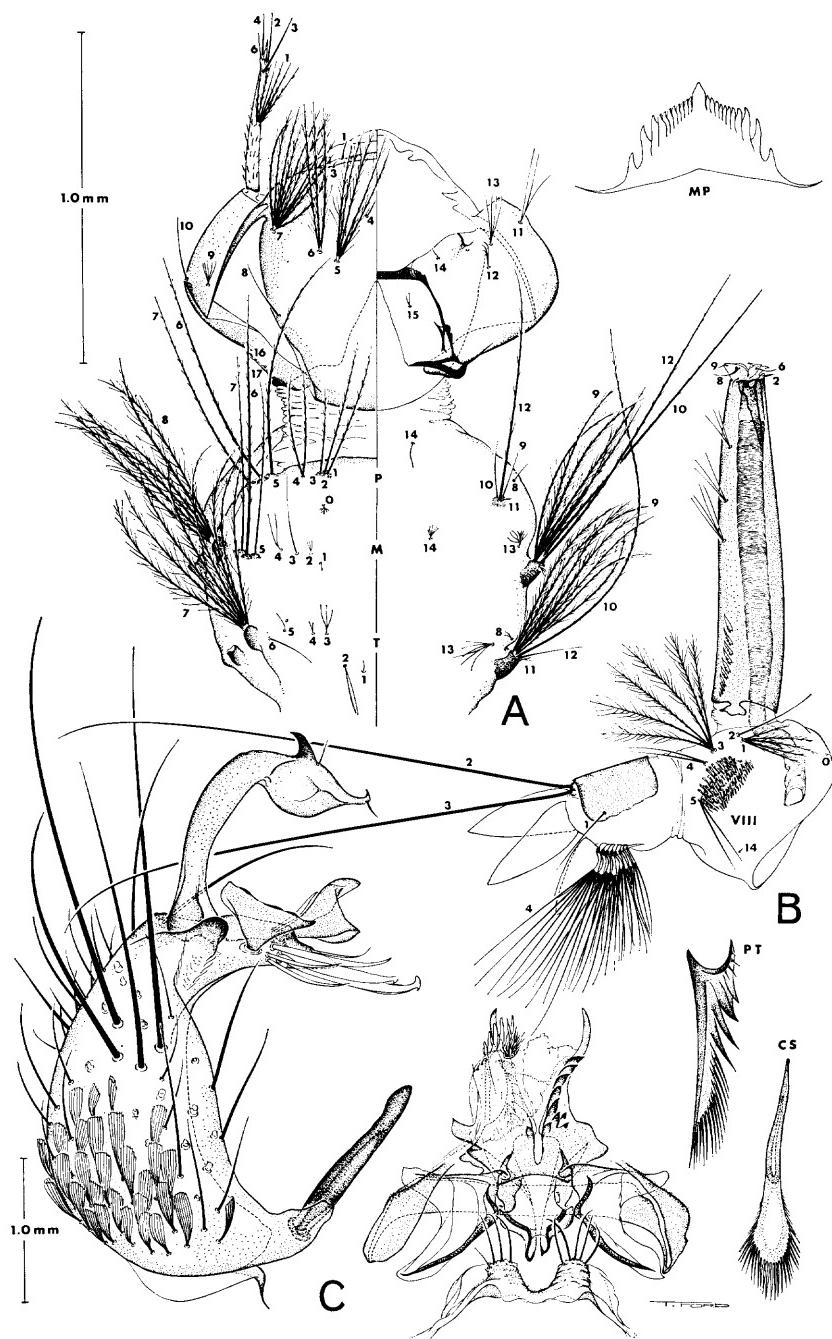
*Micraedes obscurus* (Leicester): Edwards, 1913, Bull. Ent. Res. 4:237 (taxonomy).

*Culex (Acalleomyia) obscurus* (Leicester): Edwards, 1922, Indian J. Med. Res. 10:285 (♂\*); Macdonald and Traub, 1960, Stud. Inst. Med. Res. Fed. Malaya 29:105 (biology); Macdonald, Smith, and Webb, 1965, J. Med. Ent. 1:338 (distribution); Bram, 1967, Proc. Ent. Soc. Wash. 69:328 (lectotype designation).

The adult female is most difficult to recognize, but in well preserved specimens the rather broad, flat scales on the midlobe of the scutellum are diagnostic. The adult male is easily distinguished from other species of the genus by the short palpus and the unique terminalia. The fourth stage larva exhibits an incomplete saddle on abdominal segment X and characteristic comb scales.

**FEMALE.** A rather small species without distinctive ornamentation. *Head.* Proboscis uniformly dark brown; palpus very short, similar in color to the proboscis; length of antenna slightly less than that of the proboscis; vertex with narrow, dark decumbent scales at the occiput, becoming somewhat broader and pale at the orbital line; erect scales of the vertex forked, uniformly brown. *Thorax.* Integument of the scutum dark brown, clothed with rather dense, bronze-brown scales; acrostichal bristles developed only at the extreme anterior margin; anterior and posterior dorsocentral bristles well developed, as are the other bristle patterns normally found in the genus; midlobe of the scutellum clothed with a rather dense patch of broad, flat scales; integument of the pleuron pale brown (or with a greenish tint in some specimens), without noticeable scale patches; 1 prominent posterior sternopleural and 1 lower mesepimeral bristle present, in addition to the prominent bristles on the prealar area. *Wing.* Normal for the genus, with the dorsal scales uniformly bronze-brown. *Legs.* Anterior surface of the hind femur predominantly pale, with a rather broad apical dark band which extends proximally along the dorsal margin; hind tibia and tarsus dark; fore and mid legs dark, without indications of pale patterns. *Abdomen.* Terga totally dark brown; sterna somewhat lighter, but not pale.

**MALE.** Habitus similar to that of the female. *Head.* Palpus short, its length approximately  $\frac{1}{4}$  that of the proboscis; antenna sparsely plumose. *Terminalia.* (fig. 1C). Basimere well developed, clothed with both setae and scales (particularly on the proximal half); a prominent basal tubercle present on the mesal margin upon which is inserted a strong, broad, long, and heavily sclerotized, blunt rod and a shorter, slenderer, pointed rod; subapical lobe developed as a strong, conicle tubercle at the extreme apex of the basimere; a strong, long, hooked rod, a shorter, slenderer hooked rod, and a similar but pointed rod inserted at the crown of the tubercle in addition to several accessory setae; a prominent, strongly sclerotized, Y-shaped structure basad of the rods, followed by a broad, truncate leaf and with a prominent, straight seta inserted at the extreme base of the tubercle; distimere expanded subterminally, then narrowing at the apex; with a small recurved spine opposite the distimere claw, and a larger



recurved spine on the margin of the expanded area; phallosome similar to species of the subgenus *Culiciomyia*; lateral plate of the phallosome with a basal tooth and with from 7 to 10 lateral denticles of similar size; proctiger with a tuft of fine, dorsomesal spines and prominent, spatulate, lateroventral spines; from 2 to 4 short, cercal setae present; basal sternal process short and truncate; tergum IX deeply indented, with from 3 to 5 strong setae on each of the 2 lobes.

PUPA. Without outstandingly distinctive characteristics; similar to the pupae of species in the subgenus *Culiciomyia*.

LARVA (figs. 1A, B). *Head*. Antenna normal for the genus, with a narrow, dark basal ring; head hair 1-C filamentous, its length considerably less than half the distance between the bases of the pair; 4-C single, simple; 5-C with from 4 to 6 pectinate branches; 6-C with 3 or 4 pectinate branches; 16, 17-C represented by minute spicules. *Thorax*. Integument glabrous; hairs 1, 2, 3-P single, pectinate, 3-P fine, considerably shorter than 1, 2-P; 4-P bifid or trifid, pectinate; 5, 6-P single, pectinate; 7-P single or bifid, pectinate; 8-P very short and fine, single or bifid, simple; 14-P single, simple. *Abdomen*. Integument glabrous; comb consisting of a broad, somewhat triangular patch of 70 or more fan-shaped scales; siphon index variable, ranging from 3.8:1 to 5.5:1 (average of 6 specimens, 4.4:1); 3 pairs of subventral tufts inserted on the siphon; individual tuft with from 2 to 5 simple branches, its length approximately equal to the width of the siphon at the point of insertion; pecten consisting of from 7 to 10 teeth restricted to the basal third or less of the siphon; individual pecten tooth rather short, with from 3 to 5 distinct basal barbs and a series of fine spicules at the truncate apex; saddle of segment X darkly pigmented, incomplete; ventral brush consisting of 8 hair tufts inserted on the grid; anal gills longer than the saddle, gradually tapering to a rounded apex.

TYPE DATA. Lectotype female of *obscurus* from Kuala Lumpur is in the British Museum. Three lectoparatype females and 1 lectoparatype male (which is badly damaged and with terminalia missing) are also on deposit in the British Museum.

Six individual rearings with associated larval and pupal skins have been examined from Malaysia as well as 14 additional males and nine females.

DISTRIBUTION. This species was originally described from Kuala Lumpur, Selangor, MALAYSIA. Subsequently, Macdonald and Traub (1960) also collected specimens from the state of Selangor. Macdonald, Smith, and Webb (1965) reported material from Kampong China, Kuching, Sarawak. Specimens have been examined in the British Museum collection from Tawau, Sabah.

TAXONOMIC DISCUSSION. The monotypic subgenus *Acalleomyia* demonstrates closest affinity to the subgenus *Culiciomyia*. The

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Fig. 1, *Culex (Acalleomyia) obscurus* (Leicester). A, dorsoventral aspect of the head and thorax of the fourth stage larva; B, lateral aspect of the terminal abdominal segments of the fourth stage larva; C, tergal aspect of the male terminalia.

phallosome of the male terminalia of *obscurus* is consistent with species of *Culiciomyia* in Southeast Asia and the fourth stage larva exhibits a number of points in chaetotaxy, particularly the ventral brush of abdominal segment X consisting of only eight hair tufts, which are suggestive of the subgenus *Culiciomyia*. However, the short male palpus is certainly not consistent with *Culiciomyia*, nor is the basimere of the male terminalia, which is clothed with scales as well as setae and which demonstrates a unique basomesal tubercle possessing two strong rods. In the fourth stage larva, head hair 1-C is exceptionally short and fine and the saddle of abdominal segment X is incomplete; otherwise, chaetotaxy and structure are quite similar to *Culiciomyia*. In the adult female of *obscurus*, the most noteworthy variation from *Culiciomyia* is the presence of a rather dense patch of broad, flat scales on the midlobe of the scutellum.

As has been suggested for the subgenus *Acalyntrum* by Belkin (1962), it is quite possible that *Acalleomyia* represents an off-shoot of the *Culiciomyia* stem with specialized requirements for leaf axil or stump hole habitats.

**BIOLOGY.** Macdonald and Traub (1960) collected larvae from coastal areas of Selangor in the axils and stumps of *Nipa*-palms. Specimens have been examined from Sabah which were collected from the saline habitat of a hole in a fallen mangrove tree. Ramalingam and associates (pers. comm. 1967) have collected larvae on eight occasions from the brackish water in *Nipa*-palm leaf axils in a secondary mangrove area and also collected a single female of this species biting man in the vicinity of the larval collections. Adults and larvae of *obscurus* have been collected during the months of July, October, December, and February.

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Dr. Botha de Meillon and Dr. Alan Stone kindly reviewed the manuscript and offered points of advice; Dr. P. F. Mattingly permitted examination of types in the British Museum (Natural History) and arranged for the loan of specimens; and Dr. S. Ramalingam forwarded individually reared specimens and data from Kuala Lumpur. To each of these men I extend my gratitude. The illustration was prepared by Miss Thelma L. Ford of the South East Asia Mosquito Project, and technical assistance was rendered by Miss M. T. Houck, also of SEAMP.

#### REFERENCES

- Belkin, J. N.** 1962. The mosquitoes of the South Pacific. Univ. Calif. Press, Berkeley. 2 vols., 608 and 412 pp.
- Bram, R. A.** 1967. Contributions to the mosquito fauna of Southeast Asia. II. The genus *Culex* in Thailand (Diptera: Culicidae). Cont. Amer. Ent. Inst. 2(1):1-296.
- Edwards, F. W.** 1922. A synopsis of adult oriental culicine (including megarhinine and sabethine) mosquitoes. Part I. Indian Jour. Med. Res. 10:249-293.

- Leicester, G. F.** 1908. The Culicidae of Malaya. Stud. Inst. Med. Res. F. M. S. (3):18-261.
- Macdonald, W. W., C. E. G. Smith, and H. E. Webb.** 1965. Arbovirus infections in Sarawak: observations on the mosquitoes. Jour. Med. Ent. 1:335-347.
- Macdonald, W. W. and R. Traub.** 1960. Malaysian parasites XXXVII. An introduction to the ecology of the mosquitoes of the lowland dipterocarp forest of Selangor, Malaya. Stud. Inst. Med. Res. Malaya 29:79-109.

